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E-Commerce in Costa Rica

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Abstract

An ethnographic exploration into conditions for developing e-commerce was conducted in Costa Rica in Summer 2000. It was found that Costa Rica made initial advances in e-commerce, and that it espouses some infrastructural conditions while lacking others that can be found in countries that are early entrants into e-commerce. Costa Rica may be useful for understanding a later diffusion model of e-commerce.

Keywords: E-Commerce, Costa Rica, Internet, Latin America

A number of more systematic studies on e-commerce/business focus on technology and management issues (e.g., Amor, 2000). Implied in this literature are certain economic, technological, and cultural conditions that exist in countries that entered early into the domain of e-commerce, such as, the United States and Western Europe. For example, one assumption is that there exist reliable and business supportive telecommunications, which can serve as the basis for running Web storefronts, ordering, electronic payment and other transactions. An early diffusion model of e-commerce can be conceived on the basis of such implied assumptions that, in turn, may serve as a research model in the country context. Such a model was developed for the purposes of studying e-commerce in Costa Rica, a prosperous Central American country with an extensive cooperation with the NAFTA market, and used in a field investigation.

Methodology

This section discusses criteria for choosing Costa Rica as the subject of research, an early diffusion model of e-commerce, the research question, and data collection methods.

The decision to study e-commerce in Costa Rica was based on two criteria: historical factors, and close ties between Costa Rica and NAFTA countries (the United States, Canada, and Mexico). Historically, Costa Rica has been characterized by economic and political stability. Two characteristics have distinguished it from other Latin American countries -- a stable democratic tradition since 1949, and a more equal distribution of income. Implications are paramount. Costa Rica was spared dictatorships, civil wars, old oligarchies, and a military capable of seizing power. Also, social services are developed and managed by the government, and poverty is kept to a minimum. (See Biesantz et al., 1999) The economy of Costa Rica has shifted from agriculture to tourism, manufacturing, and more recently to the information industry. (See Table 2) The country has an intensive economic exchange with the U.S. (Table 2). One of more recent accomplishments is establishing an Intel factory in Costa Rica's capital. The capability of attracting foreign capital appears to be sustainable, evolving from initial investments in a globally unique eco-tourism decades ago. The cooperation with two other NAFTA countries is increasing.

An early diffusion model of e-commerce was developed on the basis of the literature and observations in the developed countries (e.g., the U.S. and West Europe) that entered e-commerce simultaneously with technological advancements in the first half of the 1990s. The literature (e.g., Amor, 2000; Choi et al., 1997; Fingar et al., 2000) implies certain economic, technological, and cultural conditions that exist in the early entrant countries. The model in Figure 1 classifies these conditions in six pyramidally stacked infrastructural layers, which range from transportation to customer e-commerce propensity, thus encompassing economy, technology and culture of a country. Atop the last layer sit e-commerce practices. Within layers, there are specific conditions, which are depicted in Table 1, the second column (more discussion in sections below). For example, conditions belonging to the top infrastructural layer are remote ordering, payment and customer support. The model implies a certain historical linearity from bottom up, although relationships between layers are not based just on the adjacency; e.g., the telecommunications layer also relates to e-payment and customer e-commerce propensity. This model was used as the research model for collecting and interpreting data on e-commerce in Costa Rica.

The main research question driving the study was based on the research model: What is the relationship between e-commerce conditions of the early diffusion model and the e-commerce conditions in Costa Rica? The methods of data collection were interviewing (structured and semi-structured; taped in part) and observation (with participation, semi-structured and unstructured), both suiting ethnographic field research. Sampling was purposive, convenient and snow balling-based, including 24 respondents from the government, business, academia and crowd.

B2C E-Commerce in Costa Rica

E-commerce started in Costa Rica with the penetration of the Internet in the mid 1990s. Before the study trip to Costa Rica, conducted was a pilot investigation into Costa Rican Web storefronts whose primary URLs were in the .co.cr domain (.co=commercial, .cr=Costa Rica). (Travica et al., 2000) It was found that the Web storefronts supported means of capturing customer feedback, had catchy URLs, and were oriented toward English-speaking customers -- 63% of sites formally evaluated contained quality English. Also, Web storefronts exhibited underdeveloped transactional capabilities (ordering and e-payment) typical for an initial stage of e-commerce in any country when the Web is used just as a new channel for promotion and advertising. A lack of mission statements, datestamps and search tools, infrequent design updating, and instances of excessive graphics were also found to exist. The evaluation conducted during the field trip for the most part confirmed these findings. However, much longer page loading time was detected then -- both on the average and for the same sites previously accessed from the U.S. The cause for both is in the country's congested telecommunications lines. As for the faster access from the U.S., the Website visitor is automatically switched from a .co.cr site to a mirror .com site in the United States, thereby avoiding slower Internet lines in Costa Rica. All these findings indicate that B2C e-commerce has started in Costa Rica and is in the initial stage of diffusion. What infrastructure has it be built on?

Transportation

Suitable transportation conditions for early diffusion of e-commerce include the existence of diverse means of transportation – by land (roads and railroads), air, and water. The routes of any sort have to be safe. The entire infrastructure has to cater to the needs of e-commerce suitable delivery. For example, there may be large fluctuations in terms of geographical patterns of delivery, since e-commerce can open up the global market place to the customer and bring even the most remote customer to this marketplace. (More discussion on delivery is below.)

Transportation by land is dominant in Costa Rica, while the air transportation resting on 14 airfields plays some role and railroads are practically offset by the cheaper road transportation. There are about 6,000 Km of paved roads and six times as much of unpaved road, being used by about 70,000 commercial vehicles, 50,000 passenger cars, and many scooters drivers, bicyclists, and pedestrians. (Biesantz et al., 1999; World Almanac, 2000). The interurban bus appears to reach the most remote areas, and drivers may carry mail, parcels, and even oral messages (Biesantz et al., 1999). However, the roads are narrow, mostly in bad condition, and congested. Even the roads to the main tourist destinations are not any better. The prevailing mountainous terrain and the tropical rainy climate add up to the list of causes placing Costa Rica at the world's top on traffic injuries (Baker, 1999: 150).

Delivery

In contrast to traditional commerce, e-commerce reaches more broadly (since it can target remote customers and new categories of customers), increases the volume of operations (as a consequence of the broader reach), and exhibits irregular patterns (because of unpredictable dynamics of the global marketplace). Consequently, a delivery infrastructure that is capable of supporting these changes is required for e-commerce. Of course, the classical standard of efficiency is needed in e-commerce as well. Given these requirements, the above discussed limited transportation infrastructure of Costa Rica may be a constraint in the diffusion of e-commerce.

A specific delivery condition is a limited postal service. Specifically, mail delivery is limited, slow and unreliable (mail can be lost). To increase chances of receiving mail, citizens and organizations tend to rent post office boxes. Courier services fill the delivery niche, and have lately been emboldened by e-commerce needs. One such businesses is Aereo Casilleros launched few years ago through cooperation of several businesses and the state's Internet access monopoly RACSA. The user of this service needs to purchase a post office box in Florida, the United States. This box is used as the first delivery post for goods Costa Ricans purchase in the United States' Web. The Aereo Casilleros service then flies the goods to Costa Rica, where courier services receive it and deliver to customer premises. RACSA has partnered in this enterprise, because it is conducive to increasing sales of Internet accounts and connect time. This is an interesting example of creating delivery businesses suitable to e-commerce.

Another specific condition is the lack of building numbers. Street names exist in Costa Rica, but buildings cannot be referenced by a precise enumerated location, that is, absolute addressing. The lack of absolute addresses may not be a significant problem in downtown San José, the capital, because it is designed in the traditional Spanish manner as a grid of avenues and streets. A typical address there references a building as being located on a certain avenue between adjacent streets -- or the other way around. However, the capital has outgrown its old core long ago, and many settlements do not implement the grid structure. Unlike Western absolute addressing, a relative one is used in Costa Rica. The location of a sought building is described in relation to a certain landmark (supermarkets, bus stations, monuments, etc.). These descriptions are given orally and appear in official documents. A particularly interesting case is when the landmark exists only in memory, for example, a building of an institution that was moved to another location years ago. Usually, local citizens are helpful in providing this information in direct interaction on the street. These addressing specifics may pose challenges for e-commerce between foreign Web retailers and Costa Rican customers. Affected can be both customer record management based on relational database systems and systems for delivery logistics (e.g., the planning of delivery routes between suppliers, buyers, warehouses, and customers).

Telecommunications

Pervasive, technologically modern, secure and affordable telecommunications (particularly, the telephone and Internet segments) are the key to e-commerce. The marketplace is indeed created through telecommunications and that is where business transactions transpire. In addition, to the classical public switched telephone network, fast and secure Internet lines are indispensable. In the economically leading countries, the precursor to the early diffusion of e-commerce was deregulation and privatization of telecommunications. Many developing countries follow this path.

In Costa Rica, the telephone network and communications are wholly regulated/owned by the state run agency ICE (Instituto Costarricense de Electricidad; note that two distinct sectors -- telecommunications and electrical energy – are owned and managed by the same authority). There are over a half million main telephone lines in Costa Rica. Public telephones are available even in most remote areas, including a prepaid card service. The pricing policy subsidizes local traffic from long distance revenues. The quality of public telephone service, however, may vary with location. Commercial access to the Internet is provided by RACSA (Radiográphica Costarricense S.A.), a spin-off of ICE serving 35,000 clients. RACSA offers four kinds of Internet lines: the dedicated, modem, satellite, and cable line. The dedicated line service targets businesses, and belongs to a higher price range; for example, the T1 line costs $20,435 for installation plus $6,785 per month (no long-term contract), or $14,540 and $4,820 (three-year contract). The cable is a newer offering, and in Summer 2000, it cost $339 for the installation fee, plus $50 for the one way and $80 for the two-way line a month. An interesting detail is that this service was essentially subcontracted to some businesses (AMNET and Cable Tica), which may be seen as letting private interest enter into the telecommunication sector through the back door.

Home users were offered modem-based access to the Internet at $35 for 90 hours of monthly use in Summer 2000. A political push toward universal access to the Internet was visible, and plans included post offices as places for providing limited Internet access for all Costa Ricans. In December 2000, the price for modem lines below 128 kbps was dropped to $15 for unlimited monthly use. However, the field study observation indicated that modem lines were slow particularly between 10 AM and 4 PM. Even faster lines like those at universities may cause frustrations due to long wait time in the Web environment. It is rather difficult to imagine placing full cycle e-commerce transactions in such a context. However, businesses seem to be capable of finding ways out. One is to use mirror servers and/or Web service providers in the United States. Another is to purchase Internet access from RACSA while conducting most of communications through improvised, illegal satellite channels (authorities seem to be tolerant)

The arena of telecommunications reflects Costa Rican culture and gives a stamp to its contemporary politics. Visibly was this expressed in events revolving around the government's Combo proposal on partial privatizing of ICE in 1999/2000 (see La Nacion, 2000). The legislature provided for a participation of private ownership in new investments and opened the door for selling the existing property. The proposal met a stiff resistance of various social groups and caused street protests. Some rejected it on the ground of affordable access to telecommunications that could be endangered by deregulating prices – others saw the Combo as a provision for sales deals behind the scene. The political dimension of the Combo events is apparently marked by a struggle between the principles of public and private ownership. The national culture of compromising plays a mediating role and produces unique results that may be important for building diffusion strategies of e-commerce in Costa Rica. Specifically, ICE may start competing with RACSA that would in effect transform Internet access state monopoly into a duopoly.

Software Industry

A minimally capable software industry for supporting e-commerce is one that can help implement, integrate and maintain foreign software products. A step further is an industry capable of developing original e-commerce applications. Costa Rica's software

industry has past the first step and indicates a maturity for making the next. Instrumental to its advances has been an effective education system from elementary public schools through a mix of public and private universities employing the computer science and management faculty educated abroad (many in the U.S.). A significant industry of business applications (e.g., for finance, accounting, and inventory management) has developed, targeting both the domestic and Latin American market. The software industry has been growing consistently in the 1990s with no government initiatives. Precisely this kind of development is needed, said an interviewee from the academic world with strong industry ties. A software industry representative confirmed that more competition and less bureaucracy are needed in the industry as well as in the whole society. Another interviewee involved in the education for the software industry asserted that Costa Rica "bets on software" given the limited natural resources. This was confirmed by a representative of a foreign Internet-based business as being a strong force of attraction. Specific domestic applications for e-commerce include e-payment, e-banking, cryptography, and merchant account. An important player is also a consortium of prominent software vendors that was recently awarded a grant from an international development bank for improving software quality and for other projects.

Electronic Payment

E-payment is necessary for completing the value chain in e-commerce. It involves three players at minimum -- the buyer (individual or institutional), the seller, and the financial institution. From the buyer's perspective, there needs to be a propensity for adopting remote payment, such as the mechanisms of credit or prepayment. For example, the capability of owning and managing trustworthy credit cards is needed. Creditor organizations on their part have to bolster the buyer's and seller's trust in the safety of accounts and possibility of changing incorrect payments.

In Costa Rica, there are advances in the domain of remote payment. Credit cards have been around for more than a decade, and a few are specifically developed for online payments (e.g., Avalon Card). Merchants are offered online banking services (e.g., Credomatic). On the flip side, overspending forced some customers to give up credit cards and replace them with debit cards. Also, online credit cards are under restrictions of a non-trivial cash deposit and lower credit ceiling. Moreover, the individual and institutional customers' trust in banks faltered because of recent bankruptcies of a few public and private banks.

From the seller perspective, trust in buyer's solvency is a complementary need. Observations from the field trip in Costa Rica show that credit cards are broadly accepted in direct payment transactions, at least when the payer is from North America. But the trust in them may not be full yet. A field trip illustration: a clerk at a major rental car agency wondered aloud why did the North American customer preferred credit cards over cash, and what if the customer never returned home to pay dues.

Customer E-Commerce Propensity

E-commerce implies the physical separation between buyers and sellers and mediating their relationship by IT. From the customer perspective, this specifically translates into adapting to remote shopping, payment, and customer support. Specifically, adapting to remote shopping implies that the customer accepts online ordering and trusts that products/services are created according to certain standards of quality. Adapting to remote payment implies an inclination toward non-cash transactions that is discussed in the previous section. Adapting to remote customer support refers to relying both on electronic communication in transacting with the seller and on trustworthy product returns procedures.

There are some elements of the customer e-commerce propensity. In Costa Rica; for example, the online credit cards discussed above. With regard to online ordering, a lack of product standards appears to be a major hindrance. For example, there is no guarantee for a construction entrepreneur that a window or door ordered in person will comply with standards of size, materials and performance. The only way of ensuring the compliance is by directly inspecting the products. This problem can just be amplified in e-commerce. The same applies to services: it may be difficult to estimate the quality of a hotel room as part of a tourist package merely on the basis of written descriptions or price ranges because of random variation in quality. Inspection in person is again needed. This fact can hamper cross-border e-commerce in the tourist industry, which is important for Costa Rica.

Remote shopping also fits individualistic traditions, which favor mediated communication because it can help protect privacy. In contrast, oral face-to-face communication is a norm in Costa Rica much like in any other Latin American country. People like to talk in person, hear each other's voice, and exchange gazes and touches. This sort of communication facilitates establishing trust and maintaining relationships, and is a favorite pastime activity. As in other oral cultures, information told or acquired through own senses is trusted and valued more than recorded one. This was remarkably exemplified on the study trip by security workers in important institutions that preferred to memorize faces and voices of frequent visitors rather than to rely on identification documents.

While the culture of oral face-to-face communication tolerates the telephone for its oral and synchronous character, it can have a low tolerance for email as a written, asynchronous medium. In effect, it could obviate email or modify its use and benefits. The latter might happen in Costa Rica. Observations from the study trip indicated that rental car agencies and many hotels were accessible via email and accepted reservations via email. Some hotels had their email address displayed next to their firm signs. Curiously, the same was seen at the gate of a farm nearby San José. Even small provincial towns had providers of email, while upscale hotels offered it in computer rooms. The use of email was also recorded among other business people as well as academics and visitors of Internet ; the cafes were visibly present in San José and charged from $1.5 up per hour. In contrast, email can also be quite marginal. For example, there were problems with incorrect email addresses, malfunctioning mail servers, and bounced messages even in distinguished institutions and businesses; also, just 15% of 494 computer and communications firms listed in Costa Rica's Yellow Pages had their email addresses listed (Guía 2000).

Toward a Later Diffusion Model

The discussion above identified challenges to diffusing e-commerce in Costa Rica according to the early diffusion model; a summary is in Table 1, third column. With regard to potential solutions, one might be to clone the conditions for the early diffusion. However, time and monetary expenses, along with the impossibility of cloning the culture make this option infeasible. Another would be to understand the local conditions as a basis for a latter diffusion model. Such a model would attempt to build e-commerce on the infrastructural conditions that are available and have already proved to be supportive of local e-commerce, along with some innovations. Propositions for a later diffusion model are depicted in Table 1, last column. They are partly self-explanatory -- more discussion cannot be provided due to the limited space. These propositions can be used for building a model that may be relevant to similar countries.

(Note: References available at http://php.indiana.edu/~btravica/costarica-ec-ref.html.

Table 1. Infrastructural Conditions for E-Commerce

Infra-Structure Layer	Early Diffusion Condition	Costa Rican Condition	Later Diffusion Solution
CECP	– Remote ordering, payment and customer support; – Standard quality assurance; – Adoption of email communication	– Direct shopping preference; – Lack of trust in product quality; – Oral culture; – Nascent email culture	– Cross-border e-commerce; – B2B e-commerce
EP	– Capabilities for and adoption of non-cash payment; – Credit card culture (buyer's discipline, sellers trust); – Secure telecommunications; – Software industry support; – Customer trust in financial institutions	– Some adoption of non-cash payment; – Restricted; – Overspending; – Lack of sellers' trust in non-cash payment; – Lack of buyer's and seller's trust in telecommunications and banks	– Cooperation between domestic and foreign banks
SI	– Support to diverse foreign and own software products for e-commerce	– Strength in business applications; – Some support to e-commerce	– Prioritizing e-banking
TE	– Broad availability of telephone and Internet access; – Affordable Internet access; – Faster and secure Internet lines; – Deregulation and privatization	– Dispersed telephone network; – Push for universal Internet access; – Less affordable Internet access; – Slow and less secure Internet lines; – Government monopoly and bypasses; – Struggle between public and private principles; – Competition attempts	– Loosening up government monopoly; – Partial privatization; – Wireless communications
DE	– Dependable post service; – Alternative delivery services; – Absolute buildings addressing; – Broader reach; – Increased volumes; – Irregular patterns	– Limited post service; – Private courier services; – Relative buildings addressing; – Transportation constraints	– Courier services expansion; – Flexible address formats
TR	– Diverse safe means; – Functionality catering to delivery; needs (reach, volume, patterns)	– Terrestrial focus based and congested unsafe roads	– Expanding air routes

Table 2. Characteristics of Costa Rica

Area	19,575 sq. miles
Population	3,674,490 (July 1999 est.)
Language	Spanish
GDP	$24 billion
GDP - Growth Rate	5.5%
GDP / capita	$6,700
GDP Composition (1997)	agriculture: 15% industry: 24% services: 61%
Exports; Biggest Partner	$3.82 bil.; U.S. 50%
Tourism Income	$713 million
Debt - external	$3.2 billion (Oct. 1996 est.)
Telephones	525,682 main lines
Personal Computers	39/1000 inhabitants
Internet hosts	10.41/1000 inhabitants

Note: Data from 1998 if not specified otherwise.

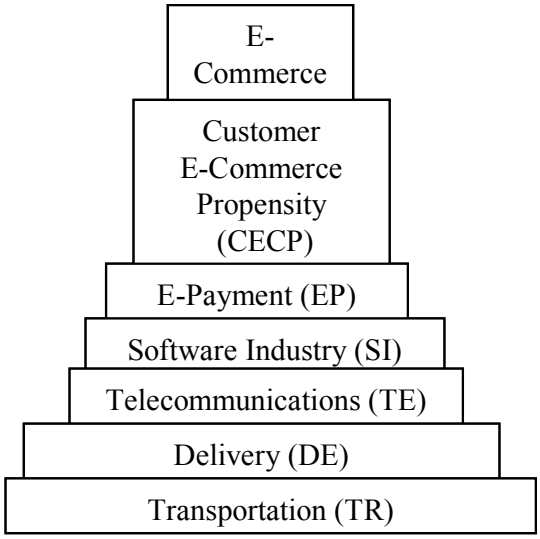

Figure 1. Early Diffusion Model of E-Commerce: Infrastructure Layers